APPENDIX C. Mammals

American Marten
Arctic Shrew
Big Brown Bat
Black-footed Ferret
Black-tailed Prairie Dog
Eastern Spotted Skunk
Gray Fox
Hispid Pocket Mouse
Little Brown Bat
Long-eared Bat
Long-legged Bat
Merriam's Shrew
Northern Long-eared Bat
Plains Pocket Mouse
Pygmy Shrew
Richardson's Ground Squirrel
River Otter
Sagebrush Vole
Swift Fox
Townsend's Big-eared Bat
Western Small-footed Bat

AMERICAN MARTEN

Scientific Name: *Martes Americana*

Species of Conservation Priority: Level II

General Description: Member of the weasel family, characterized by long slender body with a bushy tail. Similar in size to the mink. Tail roughly a third of the total length. Fur is a range of reddish to brown with a buffy to pale orange patch on the throat and chest.

Status: Year-round resident.

Abundance: Uncommon within its range in North Dakota.

Primary Habitat: Conifer and mixed forests with dense canopy cover.

Federal Status: Furbearer with a closed season.

Reason for Designation: Species with a unique habitat type found only in a small portion of the state.

USFWS

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in conifer and mixed forests with a high canopy cover. Also the presence of structure along the ground in form of downed trees and stumps are preferred.

Key Areas and Conditions for American Marten in North Dakota

Small population found in the Turtle Mountains region of Rolette and Bottineau counties.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss and degradation of mix deciduous forest in the Turtle Mountains region of North Dakota.

Other Natural or Manmade Factors

Population encroachment by fisher maybe a future concern.

RESEARCH AND SURVEY EFFORTS

Current Research or Surveys

- There are no current research projects or survey efforts for American Marten underway.

Previous Research or Surveys

- Frostburg State University conducted survey efforts for River Otter and other meso-carnivores from 2006-2009 where the initial discovery of a marten population was made.
- The marten populations was studied as part of a master's thesis by Penn St. University.

Additional Research or Surveys Needed

- Continued monitoring of the population.

MANAGEMENT RECOMMENDATIONS

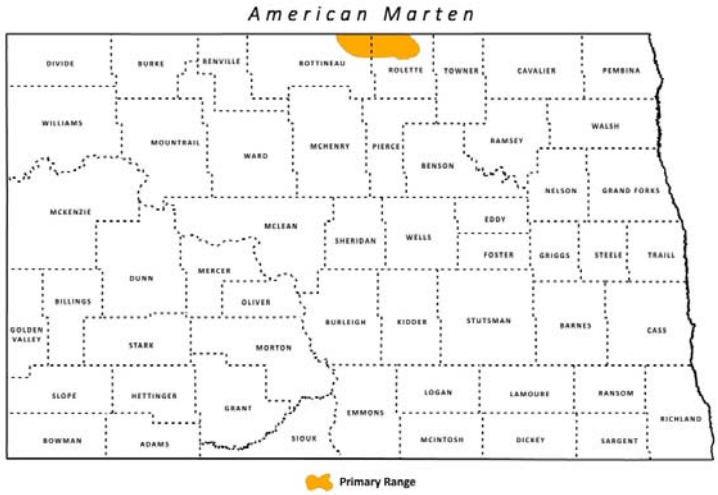
- Maintain American Marten as a furbearer with a closed season until it is determined by NDGFD biologists that the population can sustain harvest.
- Protect suitable habitat with land easement and acquisition where feasible.
- Work with the North Dakota Forest Service and private landowners to use to implement marten friendly guidelines for land management activities.
- Protect riparian corridors for movement and dispersal of populations.
- Avoid clear cutting forested areas.
- Preserve large diameter trees used for denning and resting sites.
- Preserve a woody understory component for denning and resting sites.

MONITORING PLANS

The NDGFD uses a sighting reporting system to monitor trends of American Marten. If a more detailed survey is needed the NDGFD could repeat techniques produced in **"Evaluating the Distribution and Abundance of River Otters and Other Meso-carnivores in Eastern North Dakota Drainage: Applications of GIS, Genetic and Digital Technologies for Conservation Planning."**

2005-2015 PROGRESS

The American Marten was added to the Species of Conservation Priority list in the 2015 Update of the Wildlife Action Plan. The population was discovered as part of SWG T-12-R Evaluating the Distribution and Abundance of River Otters and Other Meso-carnivores in Eastern North Dakota Drainage: Applications of GIS, Genetic and Digital Technologies for Conservation Planning. Continued funding through that grant developed information on distribution and habitat use.



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ARCTIC SHREW

Scientific Name: *Sorex arcticus*

Species of Conservation Priority: Level III

General Description: A medium sized shrew, 4 inches in length with the tail approximately one third of the total length. The pelage is tri-colored with a dark brown to black back. Brown sides, and light brown to gray venter. The top side of the tail is darker then the underside.

Status: Year-round resident.

Abundance: Uncommon.

Primary Habitat: This species is associated with grass-sedge marshes and wet meadows in North Dakota.

Federal Status: None.

Reason for Designation: The status of this small, secretive mammal is relatively unknown within North Dakota. There are concerns that it may be threatened in the southern part of its range. Information needs to be gathered to assess its condition.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in counties along the Canadian border and extending down into the eastern third of the state. Absent south and west of the Missouri River. A boreal forest species in the northern latitude it is associated with grass-sedge marshes and wet meadows in North Dakota. This species is associated with mesic habitats in other parts of its range.

Key Areas and Conditions for Arctic Shrew in North Dakota

No specific areas have been identified. The eastern half of the state does offer the most potential habitat for this species. Also the Turtle Mountains and the Pembina Gorge have habitat similar to the types of lands that this species inhabits in the northern reaches of its range.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The draining of wetlands would pose the largest threat to the types of habitat preferred by the Arctic Shrew. The loss of surrounding vegetation and associated uplands to conversion would also impact this species.

Other Natural or Manmade Factors

The use of pesticides on agricultural land in is a threat due to the impact on the shrew's food base.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Small mammal surveys are conducted by a number of entities within the range of the Arctic Shrew.
- No specific research targeting the Arctic Shrew is in progress.

Previous Research and Survey Efforts

- Baird et al. (1983) studied reproduction in the state.
- Iverson et al. (1967) documented Arctic Shrew distribution in the prairie-forest transition zone.
- A species account for the Arctic Shrew was compiled in 1996.

Additional Research and Survey Efforts Needed

- Develop a protocol to monitor small mammals within the state on a long-term basis.

MANAGEMENT RECOMMENDATIONS

- Use existing programs to protect wetlands especially those associated with native prairie.
- Work with partners to protect wetlands from drainage.
- Promote wetland buffers.
- Control noxious weeds through biological and chemical methods.
- Use fire or other tools to prevent woody invasion of grassland.
- Work with state and federal agencies to enforce existing pesticide regulations.
- Coordinate with wind energy companies to minimize impacts to wetlands.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SCP.

MONITORING PLANS

No monitoring plan has yet been developed for small mammals within the state.

2005-2015 PROGRESS

The Arctic Shrew is maintained as a Level III Species of Conservation Priority. No specific SWG's have been directed as this species although it has been documented as a part of other studies. Implementing a monitoring protocol for small mammals will provide more information in the future.

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BIG BROWN BAT

Scientific Name: *Eptesicus fuscus*

Species of Conservation Priority: Level I

General Description: Resembles the Little Brown Bat but for its larger size. An adult bat can reach 20 grams. Fur is dark brown in color, tragus and uropatigium lack hair.

Status: Seasonal as no know hibernacula for this species have been identified.

Abundance: Common.

Primary Habitat: Found in both urban and rural habitats. Insect availability tends to be the limiting factor versus a type of habitat. Commonly associated with trees.

Federal Status: None.

Reason for Designation: Although common in North Dakota species is threatened by a fungal disease known as white-nose syndrome in the eastern and Midwest portions of its range.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Species does not require a specific habitat. If water and food (hard bodied insects) are available Big Brown Bats can be found. Will use buildings, bridges, and dead trees as roosting habitat.

Key Areas for Big Brown Bat in North Dakota

Little Brown Bats are found throughout the state.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss and disturbance of roost habitat is a threat to this species.

Other Natural or Manmade Factors

White-nose Syndrome is a significant threat to this species. North Dakota bat species are insectivores. The use of pesticides in the vicinity of a feeding ground would affect bat populations by killing prey. This species is known to store pesticides within fat reserves. Accumulation within body may cause negative reactions or death. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- North Dakota State University is currently trying to identify potential roosting and hibernacula habitat in western North Dakota.
- North Dakota State University is currently developing a Bat Management/White-nose Syndrome Response plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University (SWG T2-5-R).
- Northern Prairie Wildlife Research Center identified previous work for mammals in North Dakota.
- A number of agencies have surveyed for small mammals in the southwestern part of the state, including REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Implement a protocol to monitor bats within the state on a long-term basis.
- Research to address primary threats to this species.

MANAGEMENT RECOMMENDATIONS

- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

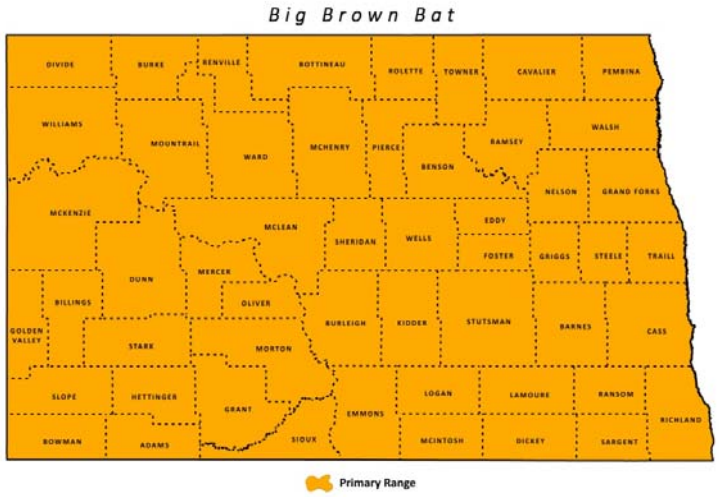
- Protect roosting habitat by easement or land acquisition where possible

MONITORING PLANS

A monitoring protocol will be addressed in the Bat Management Plan currently under development.

2005-2015 PROGRESS

The Big Brown Bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015. Although currently secure in North Dakota, White-nose Syndrome threatens this species in much of its eastern range.



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BLACK-FOOTED FERRET

Scientific Name: *Mustela nigripes*

Species of Conservation Priority: Level I

General Description: A mink-sized member of the weasel family, up to 26 in. in length. Pelage is buff with the throat and belly generally whiter. The feet are black, as is the tip of the tail. A black band covers the eyes, and is more prominent in younger individuals.

Status: Believed Extirpated.

Abundance: Rare.

Primary Habitat: Associated exclusively with prairie dog towns. Use burrows for shelter and feeds on prairie dogs and other species that live within the town.

Federal Status: Endangered.

Reason for Designation: Extirpated from North Dakota in the early 1950s. Records of sightings continued until the 1970s. Poisoning efforts directed toward the Black-tailed Prairie Dog in the early part of the century caused the decline and eventual loss of North Dakota's ferret population.

USFWS

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Black-footed Ferrets require large complexes of prairie dog colonies, 10,000 acres or more with towns no farther than three miles apart to sustain a viable population of 120 ferrets.

Key Areas for Black-footed Ferret in North Dakota

The Little Missouri National Grasslands and the Standing Rock reservation may be suitable areas if Black-tailed Prairie Dog populations were to expand.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Large prairie dog complexes needed to support a Black-footed Ferret population do not currently exist in North Dakota. With widespread negative sentiment toward prairie dogs within the state it is uncertain whether prairie dog complexes would be allowed to expand sufficiently to support ferret reintroduction.

Other Natural or Manmade Factors

Poisoning of Black-tailed Prairie Dog colonies has resulted in loss of population. Poisoning is legal on private land in North Dakota. Many types of poisons are used, but zinc phosphide and Rosal are the most common. Conversion of rangeland for agricultural uses is decreasing Black-tailed Prairie Dog acres within the state, which in turn reduces potential Black-footed Ferret habitat.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- A fringe mammal study is being conducted by Northeastern State University. Black-footed Ferret is included in this study.

Previous Research and Survey Efforts

- Black-tailed Prairie Dog colonies are surveyed every six years by the North Dakota Game and Fish Department to estimated population status.
- The U. S. Forest Service Dakota Prairie Grasslands office conducts surveys every three years on Forest Service land in its region.
- Theodore Roosevelt National Park surveys towns within their lands yearly.

Additional Research and Survey Efforts Needed

- Potential sites for Black-tailed Prairie Dog expansion need to be identified before ferret reintroduction can be considered.

MANAGEMENT RECOMMENDATIONS

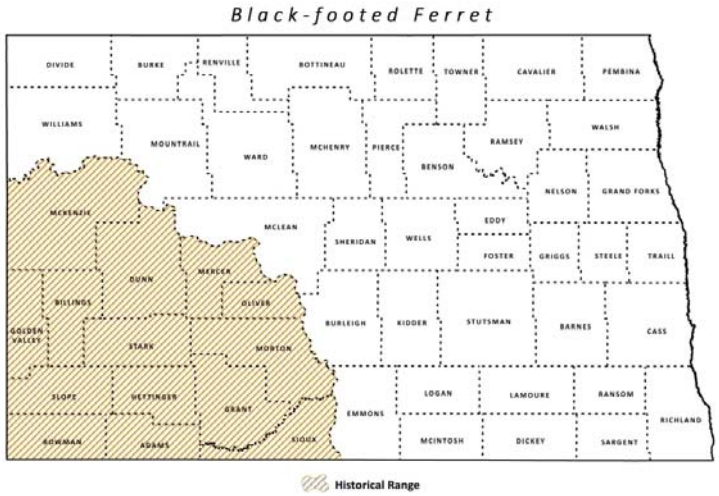
- Management recommendations for the recovery of the Black-footed Ferret are outlined in the Black-footed Ferret Recovery Plan.
  http://www.fws.gov/mountainprairie/mammals/blackfootedferret/2013DraftRevisedRecoverPlan.pdf

MONITORING PLANS

Prairie dog towns will be monitored for Black-footed Ferrets during Black-tailed Prairie Dog survey efforts.

2005-2015 PROGRESS

The Black-footed Ferret continues to be a Level I Species of Conservation Priority. It is still considered extirpated from the state. Reintroductions in neighboring states may provide a conduit for re-colonization outside of re-introduction.



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BLACK-TAILED PRAIRIE DOG

Scientific Name: *Cynomys ludovicianus*

Species of Conservation Priority: Level I

General Description: North Dakota's largest ground squirrel, it is yellowish tan on its back and lighter on the belly. It has a short tail with a black tip. Found in colonies of many individuals.

Status: Year-round resident.

Abundance: Locally Common.

Primary Habitat: Short and mixed grasslands, usually well grazed lands.

Federal Status: Endangered.

Reason for Designation: Black-tailed Prairie Dog habitat has been reduced to 1% of its historic amount. The combination of grassland conversion and concentrated poisoning are the main causes of their population decline. Numerous grassland species depend on Black-tailed Prairie Dogs for habitat and food, including other species of conservation priority such as Burrowing Owl and Ferruginous Hawk.

NDGFD

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Black-tailed Prairie Dogs are confined to prairie communities with short vegetation and relatively flat topography. They are often found in relation to areas grazed by livestock. Black-tailed Prairie Dogs live in large colonies known as "towns."

Key Areas for Black-tailed Prairie Dog in North Dakota

Black-tailed Prairie Dogs occur in two distinct population complexes in ND; the Little Missouri National Grasslands complex and the Standing Rock complex which includes Sioux County. and portions of Grant and Morton Counties.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss of suitable Black-tailed Prairie Dog habitat is a major problem. Habitat loss is attributed to conversion of grassland to agricultural land. Historically, Black-tailed Prairie Dog range encompassed 12 million acres, of which 10% was occupied at any one time. The most recent survey estimated the North Dakota has roughly 20,000 acres.

Other Natural or Manmade Factors

Poisoning of Black-tailed Prairie Dog colonies has resulted in loss of population. Poisoning is legal on private land in North Dakota. Many types of poisons are used, but zinc phosphide and Rosal are the most common.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Black-tailed Prairie Dog colonies are surveyed every six years by the North Dakota Game and Fish Department to estimated population status.
- The U. S. Forest Service Dakota Prairie Grasslands office conducts surveys every three years on Forest Service land in its region.
- Theodore Roosevelt National Park surveys towns within their lands yearly.

Previous Research and Survey Efforts

- The North Dakota Game and Fish Department surveyed nonfederal lands in 2006 and 2012.
- Reid documented the distribution of Black-tailed Prairie Dogs in southwestern North Dakota in 1954.
- A status of the Black-tailed Prairie Dog and Black-footed Ferret was conducted by Grondahl in 1973.
- Bishop and Culbertson studied prairie dog town declines in southwestern North Dakota in 1976.
- John Sidle conducted aerial surveys in 2001 to estimate acreages in North Dakota.
- A Black-tailed Prairie Dog population viability assessment was performed by Knowles in 2001.
- Knowles also completed a status of the Black-tailed Prairie Dog in 2003.
- Black-tailed Prairie Dog colony expansion was studied by Milne in 2002-03.

Additional Research and Survey Efforts Needed

- Evaluate changes in distribution and population densities at sites prior to, during, and after oil and gas development.

- Determine the effects of fragmentation and development of barriers due to urbanization and agricultural development on dispersal and maintenance of colonies.
- Determine the effects of timing and intensity of grazing regimes on the use of habitats by BTPDs.
- Investigate the presence of sylvatic plague in North Dakota colonies.

MANAGEMENT RECOMMENDATIONS

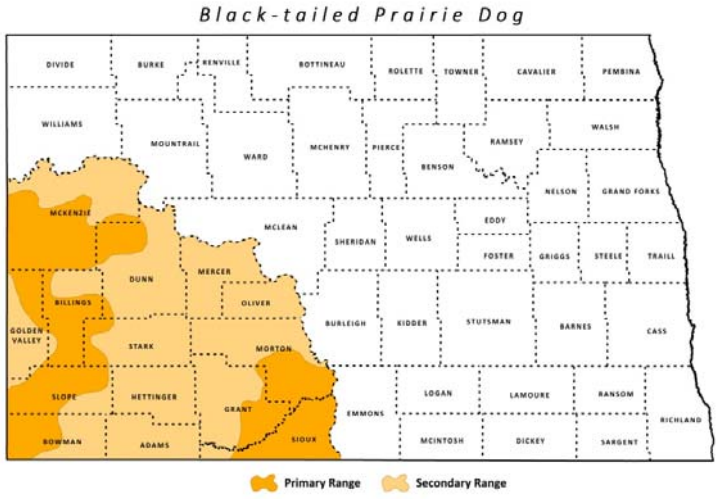
- Work with private landowners to develop grazing management practices that consider the season, duration, distribution, frequency, and intensity of grazing use on areas to maintain vegetation on both upland and riparian sites.
- Where appropriate, incorporate the use of mechanical, chemical, and biological methods of weed control to manage noxious weeds.
- Work with private landowner to incorporate prescribed land treatments into livestock management practices to develop sustainability of biological diversity.
- Monitor the effects of shooting. The NDGFD has the authority to place restrictions on shooting if necessary.

MONITORING PLANS

The North Dakota Game and Fish Department will work towards implementing a new survey technique using NAIP imagery. This methodology will be used by all 13 states in the range of the Black-tailed Prairie Dog. This standardization will allow for better data for range wide assessments of population.

2005-2015 PROGRESS

The Black-tailed Prairie Dog continues to be a Level I Species of Conservation Priority. Population has held steady at roughly 20,000 acres. The addition and loss of small “towns” appears common. The NDGFD is working toward a standardized method of survey used by all states in the Black-tailed Prairie Dogs range.



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EASTERN SPOTTED SKUNK

Scientific Name: *Spilogale putorius*

Species of Conservation Priority: Level III

General Description: Roughly the size of a small house cat, it is distinguishable from the more common striped skunk by six white spots running the length of its back, and a small white spot between its eyes. It also has an all-black tail with a white tip. Nocturnal and highly secretive.

Status: Potential year-round resident. Has not been document recently in the state.

Abundance: Rare.

Primary Habitat: Found in riparian areas and vegetated fence lines along agricultural fields. Den in dark, dry burrows dug themselves or by other mammals. May also den in haystacks, rock piles or abandoned buildings.

Federal Status: Currently under petition for protection under the threatened and endangered species act.

Reason for Designation: Little is known regarding the habitats of this secretive species. Riparian habitat it uses is threatened by agricultural practices and overgrazing. This species is likely on the edge of its range in North Dakota.

Bob Gress

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

In prairie habitats this species can be found in wooded riparian areas or vegetation and fence rows along agricultural fields. Found hunting small mammals, reptiles, and amphibians at night in crop fields.

Key Areas for Eastern Spotted Skunk in North Dakota

No specific focus areas have been identified. Was not documented in recent meso-carnivore surveys so its presence in North Dakota is unclear.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss of riparian areas is a major concern for Eastern Spotted Skunk. It uses these areas to hunt, and also dens in logs and brush piles.

Other Natural or Manmade Factors

In other parts of its range, automobile collisions and poisoning are known threats to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Northeastern State University and Dickinson State University are currently studying "Fringe Mammals" in western North Dakota. This includes Eastern Spotted Skunk.

Previous Research and Survey Efforts

- Frostburg State University conducted meso-carnivore surveys within the believed range of the Eastern Spotted Skunk.

Additional Research and Survey Efforts Needed

- Determine presence of Eastern Spotted Skunk in the state.
- Develop a protocol to monitor the Eastern Spotted Skunk in the state.
- Develop research to define ecology, resource needs, and population dynamics of this species in the state if found to be present.

MANAGEMENT RECOMMENDATIONS

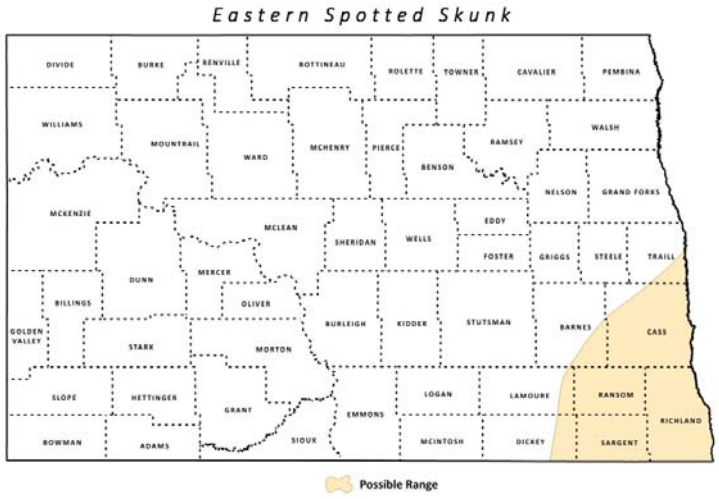
- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Develop and promote incentive programs to restore riparian areas.

MONITORING PLANS

No monitoring plan has been developed for this species.

2005-2015 PROGRESS

The Eastern Spotted Skunk remains a Level III Species of Conservation Priority. Efforts to document the species in SWG T-12-R Evaluating the Distribution and Abundance of River Otters and Other Meso-carnivores in Eastern North Dakota Drainage: Applications of GIS, Genetic and Digital Technologies for Conservation Planning were unsuccessful. It has recently been petitioned for protection under the Endangered Species Act and North Dakota is considered within its range.



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GRAY FOX

Scientific Name: *Urocyon cinereoargenteus*

Species of Conservation Priority: Level III

General Description: Medium sized fox that has grizzled gray fur along its back with a light colored underside. Patches of red are found on its neck, belly and the inside of its legs. Its tail is black-tipped. It is generally smaller than the more common red fox.

Status: Resident.

Abundance: Uncommon.

Primary Habitat: This fox is found mostly in brushy or wooded habitat, generally along riparian areas. In North Dakota it is an uncommon species with most reports from the eastern side of the state.

Federal Status: No current federal status. Under consideration for listing under the threatened and endangered species act.

Reason for Designation: Recently petitioned for listing under the Endangered Species Act. It appears its population has decline within its range. A relative newcomer to the state, North Dakota appears to be the northwestern edge of its range.

Bob Gress

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Gray Fox prefer brushy/shrubby habitat often associated with forested habitats. Throughout their range they are found in agricultural landscapes and woodlots. They are often associated with riparian areas.

Key Areas for Gray Fox in North Dakota

Uncommon in the state but records of sightings are found in most counties in the eastern 2/3rds of the state. Riparian areas of the Red, James, Sheyenne, and Missouri rivers would be potentially key areas for the Gray Fox.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss of riparian areas is a concern for Gray Fox. It uses these areas to hunt, and also dens in logs and brush piles. Conversion of grassland/shrub habitats to other land uses.

Other Natural or Manmade Factors

No other problems have been identified.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Northeastern State University and Dickinson State University are currently studying “Fringe Mammals” in western North Dakota. This includes Gray Fox.

Previous Research and Survey Efforts

- Frostburg State University conducted meso-carnivore surveys within the believed range of the Eastern Spotted Skunk.

Additional Research and Survey Efforts Needed

- No additional research needs have been identified.

MANAGEMENT RECOMMENDATIONS

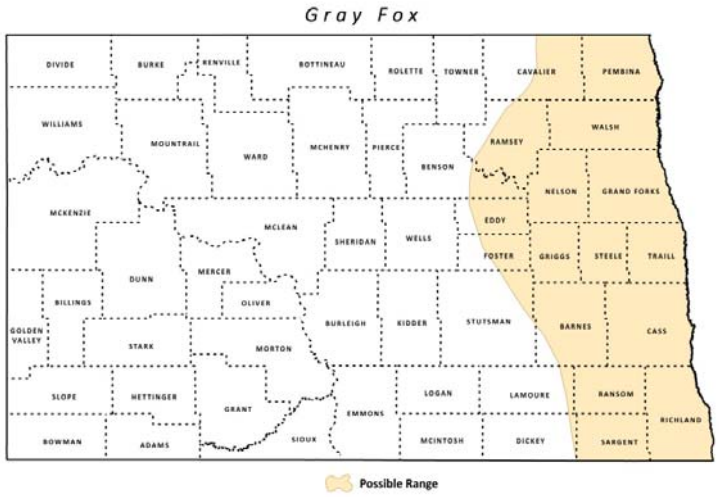
- Protect riparian areas where possible (i.e. easements and/or acquisition).
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Develop and promote incentive programs to restore riparian areas.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship

MONITORING PLANS

Gray Fox are furbearer in North Dakota. The North Dakota Game and Fish Department with use fur harvest records and reports to the rare furbear recording system to track Gray Fox.

2005-2015 PROGRESS

The Gray Fox was added to the Species of Conservation Priority list in the 2015 revision of the Wildlife Action Plan due to its potential listing under the Endangered Species Act. Although uncommon its range does include eastern North Dakota.



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HISPID POCKET MOUSE

Scientific Name: *Chaetodipus hispidus*

Species of Conservation Priority: Level III

General Description: A medium sized mouse with large back feet, whose tail is roughly the same length as its body. The fur on its back is a mix of black and tan with an orange stripe separating it from the white belly.

Status: Resident.

Abundance: Locally common.

Primary Habitat: Short and mixed-grass prairie tracts. Found predominantly in southern North Dakota west of the Missouri River.

Federal Status: No current federal status.

Reason for Designation: Little is known of the habits and status of this rodent. Only small pockets of this species' habitat occur within the state, and loss of native prairie is a concern. North Dakota is considered at the northern edge of the Hispid Pocket Mouse range.

Bob Gress

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Hispid pocket mice prefer short and mixed-grass prairie tracts. Predominantly grainivores, they eat seeds from native grasses for food, and may also feed in grain fields.

Key Areas for Hispid Pocket Mouse in North Dakota

No key areas have been identified for this species. Species has been documented in Morton, Grant, Sioux, Hettinger, Adams, Bowman, and Slope Counties.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Conversion of native and tame grass tracts from grazing and hay land to crop land is the greatest threat for this rodent. This action reduces food sources and removes critical cover for nesting and protection.

Other Natural or Manmade Factors

Disease may be factor for this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Northeastern State University and Dickinson State University are currently studying "Fringe Mammals" in western North Dakota. This includes Hispid Pocket Mouse.

Previous Research and Survey Efforts

- A number of agencies have surveyed for small mammals in the southwestern part of the state, including REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.
- Northern Prairie Wildlife Research Center has of developed an annotated bibliography for mammals in North Dakota.
- The University of North Dakota conducted small mammal and herptile surveys in Southwestern North Dakota in 2006.
- Dickinson State University surveyed small mammals in western North Dakota as part of a Black-tailed Prairie Dog survey.

Additional Research and Survey Efforts Needed

- All aspects of this species ecology need to be examined, including abundance, reproduction, habitat requirements, and threats.
- Develop a monitoring protocol for small mammals in North Dakota.

MANAGEMENT RECOMMENDATIONS

- Protect native prairie where possible.
- Work with city planners to conserve existing native prairie.
- Consider removal of dilapidated shelterbelts or stands of trees within grassland, particularly within 50 meters of grassland patches >100 ha.
- Implement grazing systems to benefit grassland species.
- Work cooperatively with state and federal agencies to develop BMP's that promote use of fire.
- Control noxious weeds through biological and chemical methods.
- Use fire or other tools to prevent woody invasion of grassland.
- Work with state and federal agencies to enforce existing pesticide regulations.

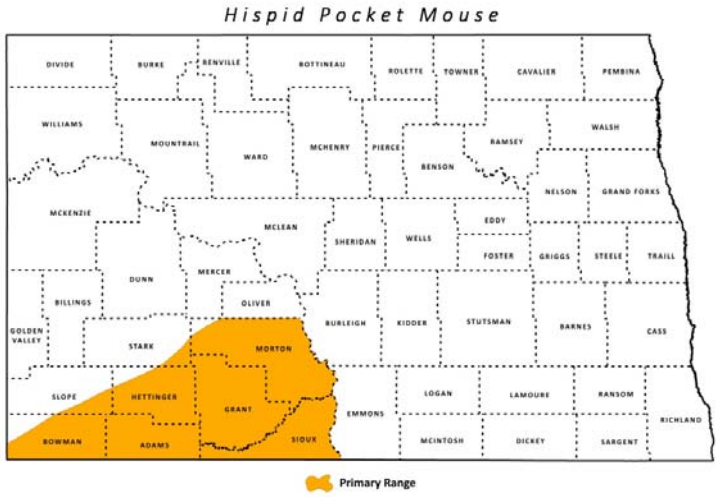
- Coordinate with wind energy companies to minimize impacts.
- Survey areas of data gaps. Continue to conduct research/surveys to establish baseline information on Hispid Pocket Mouse.

MONITORING PLANS

No monitoring plan has yet been developed.

2005-2015 PROGRESS

The Hispid Pocket Mouse maintains a Level III on the Species of Conservation Priority list. A better understanding of this species historic distribution has been developed, but information on life history is still lacking. A Fringe Mammal Surveys (SWG T-39-R) will gather data on the Hispid Pocket Mouse.



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LITTLE BROWN BAT

Scientific Name: *Myotis lucifugus*

Species of Conservation Priority: Level I

General Description: As the name implies the fur of the Little Brown Bat is shade of brown with the top being darker then the underside. They also have a darker spot in the area of the shoulder. The wings and uropatigium are absent of hair.

Status: Seasonal as no known hibernacula have been identified.

Abundance: Common.

Primary Habitat: Roosts are established in structures in the summer months but also can be found in dead trees.

Federal Status: No current federal status.

Reason for Designation: Although common in North Dakota species is threatened by a fungal disease known as white-nose syndrome in the eastern and Midwest portions of its range.

BCI

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Little Brown Bats are generally associated with buildings which they use as roosts. Roosts are generally near feeding areas where they can access flying insects for food. Hibernacula are generally caves and mines in which the temperature does not fall below freezing and has high humidity. No hibernacula have been identified in the state.

Key Areas for Little Brown Bat in North Dakota

Little Brown Bats are found throughout the state.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss and disturbance of roost habitat is a threat to this species.

Other Natural or Manmade Factors

White-nose Syndrome is a significant threat to this species.

North Dakota bat species are insectivores. The use of pesticides in the vicinity of a feeding ground would affect bat populations by killing prey. Also, bat species are known to store pesticides within fat reserves. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- North Dakota State University is currently trying to identify potential roosting and hibernacula habitat in western North Dakota.
- North Dakota State University is currently developing a Bat Management/White-nose Syndrome Response plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University.
- Northern Prairie Wildlife Research Center is in the process of identifying previous work for mammals of southwestern North Dakota.
- A number of agencies have surveyed small mammals in the southwestern part of the state, including REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.

MANAGEMENT RECOMMENDATIONS

- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

- A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

The Little Brown Bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015. Although currently secure in North Dakota, White-nose Syndrome threatens this species in much of its eastern range.

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LONG-EARED BAT

Scientific Name: *Myotis evotis*

Species of Conservation Priority: Level III

General Description: Large bat, 3 to 4 inches in length. Its fur can range from a dark brown to pale yellow. Most striking feature is its large, hairless, black ears that extend well above its head. Lacks hair on the fringe of uropatagium.

Status: Possible year-round resident. May migrate short distances to find suitable hibernacula in winter.

Abundance: Rare.

Primary Habitat: Found in extreme western North Dakota. Normally found in rugged terrain they roost alone or in small groups in rock crevices and under tree bark. This species has a strong association with coniferous trees. Hibernates in caves and abandoned mines.

Federal Status: No current federal status.

Reason for Designation: Little is known about this species in North Dakota. Although rare to the state there are some indications that it is declining range-wide.

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in western North Dakota's badlands. Prefers broken rock outcrops and cliffs for roosting sites. Associated with conifer stands, but may use deciduous stands and sagebrush flats if roosting sites are available.

Key Areas for Long-eared Bat in North Dakota

The ponderosa pines of the badlands are identified as a key area for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

This and other bat species in the state rely on caves and crevices for hibernacula and maternal grounds. These sites are susceptible to human and other types of disturbance. Frequent disturbance may cause females to drop young in the rearing process or abandon the area.

Other Natural or Manmade Factors

Long-eared Bat and other bats in North Dakota are insectivores. Pesticides used in the vicinity of feeding grounds would affect bat populations by killing prey. Also, bats are known to store pesticides within fat reserves. Loss of water sources for drinking is also a potential threat. When natural water sources are dry, bats may resort to drinking from stock tanks. These can be potential bat traps. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Identification of hibernacula in western North Dakota as well as their susceptibility to White-nose Syndrome is being conducted by North Dakota State University.
- North Dakota State University is currently developing a North Dakota Bat Management Plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University .
- A number of agencies have surveyed for small mammals in the southwestern part of the state including, REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.

MANAGEMENT RECOMMENDATIONS

- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.

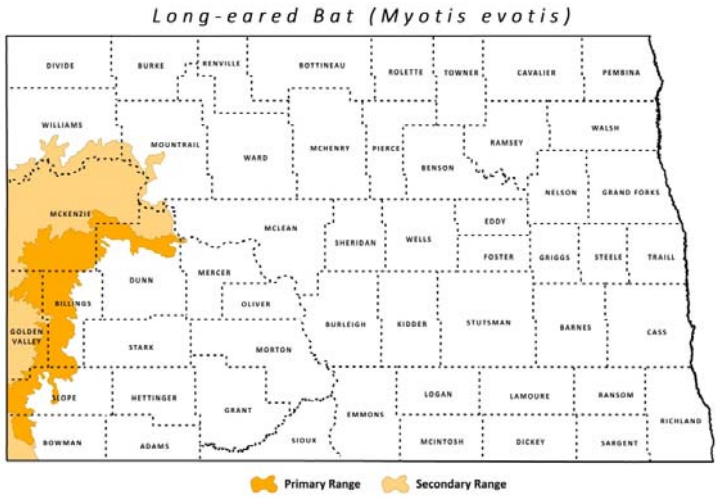
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

- A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

The Long-eared Bat maintains its Level III Species of Conservation Priority ranking due to its fringe species status. SWG T2-5-R **Distribution and Habitat Use of the Bats of North Dakota** increased the information known for this species. Continued work is needed to address threats to this species and implementation of a monitoring plan.



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LONG-LEGGED BAT

Scientific Name: *Myotis volans*

Species of Conservation Priority: Level III

General Description: A large western bat growing to 4 inches with a wingspan of 10-12 inches. Pelage is dark brown and extends out along the underside of the wings. Wings and short, round ears are black.

Status: Possible year-round resident. May migrate short distances to find suitable hibernacula in winter.

Abundance: Rare.

Primary Habitat: Found in the badlands of western North Dakota and along the Missouri River. Normally found in rugged terrain, they roost alone or in small groups in rock crevices and under tree bark. This species has a strong association with coniferous trees.

Federal Status: No current federal status.

Reason for Designation: Little is known about this species in North Dakota. Although rare to the state there are some indications that it is declining range-wide.

BCI

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

This species is found mostly in close relation to conifer stands. Uses tree snags, crevices, buildings and cliffs for roosting.

Key Areas for Long-legged Bat in North Dakota

The ponderosa pine area of the badlands has been identified as a key area for the long-legged bat. This species has also been documented along the Missouri River in Central North Dakota.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

This and other bat species in the state rely on caves and crevices for hibernacula and maternal grounds. These sites are susceptible to human and other types of disturbance. Frequent disturbance may cause females to drop young in the rearing process or abandon the area.

Other Natural or Manmade Factors

Long-legged bat and other bats in North Dakota are insectivores. Pesticides used in the vicinity of feeding grounds would affect bat populations by killing prey. Also, bats are known to store pesticides within fat reserves. Loss of water sources for drinking is also a potential threat. When natural water sources are dry, bats may resort to drinking from stock tanks. These can be potential bat traps. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

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Previous Research and Survey Efforts

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Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.

MANAGEMENT RECOMMENDATIONS

- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.

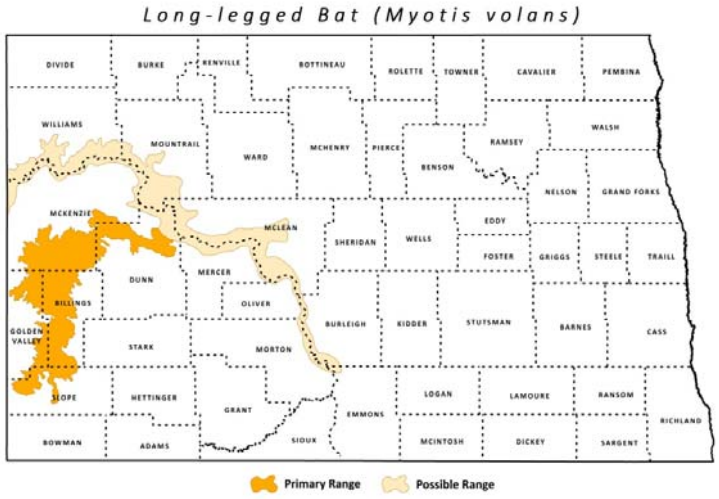
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

The Long-legged bat maintains its Level III Species of Conservation Priority ranking due to its fringe species status. SWG T2-5-R Distribution and Habitat Use of the Bats of North Dakota increased the information known for this species including a range expansion. Continued work is need to address threats to this species and implementation of a monitoring plan.



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MERRIAM'S SHREW

Scientific Name: *Sorex merriami*

Species of Conservation Priority: Level III

General Description: A medium sized shrew approximately 4 inches in total length. Pelage gray above with a lighter buff or white underside.

Status: Resident.

Abundance: Rare.

Primary Habitat: Found in dry short-grass prairie or sage steppe habitats.

Federal Status: No federal status.

Reason for Designation: Rare to North Dakota. Maybe on the fringe of its range but recent surveys may be showing some range expansion.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Currently it has been documented in extreme western North Dakota. Its preference for arid grasslands and sage-steppe habitat would make it possible in counties on the western and southwestern edge of North Dakota. Literature shows an association with sage-brush vole populations although it has not been documented in North Dakota.

Key Areas for Merriam's Shrew in North Dakota

Merriam's Shrews have been documented in Billings and McKenzie counties in the state. Recent records have come from Black-tailed Prairie Dog colonies. This may show a potential preference for this species. Also literature shows an association with sage-brush vole populations although it has not been documented in North Dakota.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss of native mixed grass prairie and sage-steppe habitat.

Other Natural or Manmade Factors

Loss and fragmentation of habitat due to energy development.
Over-grazing of mixed grass and sage-steppe habitat.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Northeastern State University is currently surveying "fringe" mammals in southwestern ND of which the Merriam's Shrew is included.

Previous Research and Survey Efforts

- Northern Prairie Wildlife Research Center has developed an annotated bibliography for mammals of North Dakota
- University of North Dakota Climate Change and Land use Effects on Small Mammal Communities in a Northern Great Plans Landscape.

Additional Research and Survey Efforts Needed

- Research and survey efforts are needed to identify target areas and possible threats for this species.
- Develop a monitoring protocol for small mammals.

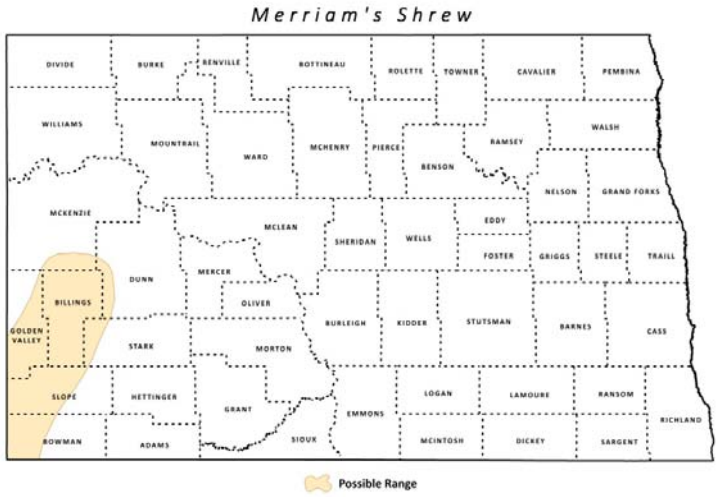
MANAGEMENT RECOMMENDATIONS

- Work with partners to implement easements or land acquisition.
- Work with the oil industry to minimize impacts to grassland habitats.
- Implement restoration projects where possible.
- Implement grazing systems to benefit shortgrass prairie residual cover, forb species, and woody draws.
- Control noxious weeds through biological and chemical methods.
- Work with oil industry to minimize impacts to short-grass habitats.
- Look to exchange and consolidate mineral rights, particularly within focus areas.
- Continue to provide public land management agencies with mitigation recommendations in respect to species of concern.

- Survey areas of data gaps. Conduct research/surveys to establish baseline information on SCP.

Monitoring Plans
No monitoring plan for this species has been developed.

2005-2015 PROGRESS
The Merriam's Shrew was added as a Level III Species of Conservation Priority in the 2015 revision of the Wildlife Action Plan. Individuals documented in the recent Black-tailed Prairie Dog survey (SWG T-32-R) were only 2nd and 3rd recorded for the state. SWG T39-R **Survey of "Fringe Mammals**" will investigate this species status in the state further.



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NORTHERN LONG-EARED BAT

Scientific Name: *Myotis septentrionalis*

Species of Conservation Priority: Level I

General Description: Small bat. Fur generally brown in color. Ears and tail are longer than other myotis species of its size. Tragus also longer than similar sized bats, such as the Little Brown Bat.

Status: Seasonal as no hibernacula have been identified for this species in the state.

Abundance: Rare.

Primary Habitat: Primarily found in woodlands within its range.

Federal Status: Threatened.

Reason for Designation: Rare to the state. Listed as Threatened under the Endangered Species Act. Listed as a state species of concern in Minnesota. A significant loss of individuals to White-nosed Syndrome in eastern and Midwestern United States has caused a population concern range wide.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Prefers wooded habitat. Generally roosts in trees under loose bark or within holes. Hibernates within caves and mine shafts.

Key Areas for Northern Long-eared Bat in North Dakota

This species has only been identified in a few locations in North Dakota. It has been documented in forested habitat in the Turtle Mountains, and the riparian corridors of the Little Missouri and Missouri rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

This and other bat species in the state rely on caves and crevices for hibernacula and maternal grounds. These sites are susceptible to human and other types of disturbance. Frequent disturbance may cause females to drop young in the rearing process or abandon the area.

Other Natural or Manmade Factors

Northern Long-eared Bat and other bats in North Dakota are insectivores. Pesticides used in the vicinity of feeding grounds would affect bat populations by killing prey. Also, bats are known to store pesticides within fat reserves. Loss of water sources for drinking is also a potential threat. When natural water sources are dry, bats may resort to drinking from stock tanks. These can be potential bat traps. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Identification of hibernacula in western North Dakota as well as their susceptibility to White-nose Syndrome is being conducted by North Dakota State University.
- North Dakota State University is currently developing a North Dakota Bat Management Plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University.
- A number of agencies have surveyed for small mammals in the southwestern part of the state including, REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.
- Life History requirements for this species specific to North Dakota should be investigated.

MANAGEMENT RECOMMENDATIONS

- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.

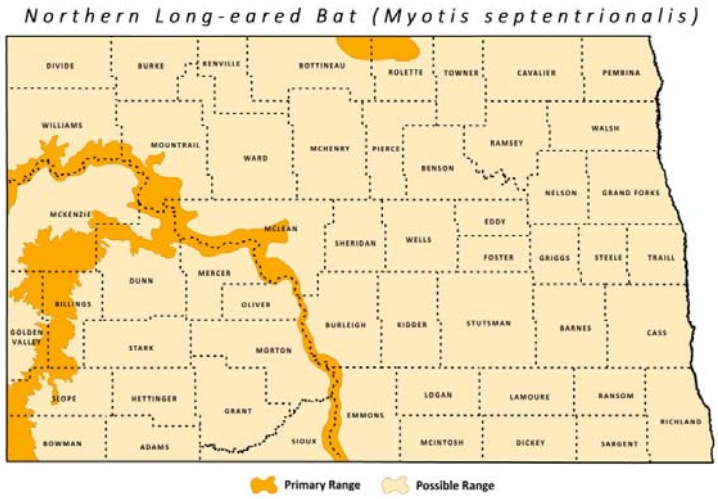
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

The Northern Long-eared Bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015. Listed as a threatened species in April of 2015. Rare to North Dakota, White-nose Syndrome threatens this species in much of its eastern range.



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PLAINS POCKET MOUSE

Scientific Name: *Perognathus flavenscens*

Species of Conservation Priority: Level III

General Description: A medium-sized mouse of 5 inches in length, including tail. Its tail is roughly the same length as its body and has pale black stripe on top. Its fur is a buff gray on top with a lighter underside. A distinct light patch is visible behind each ear. Its hind feet are distinctly larger than its front feet.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in eastern North Dakota in areas with exposed sand dunes or sandy soils covered with grass. Can also be found feeding in crop fields.

Federal Status: No federal status.

Reason for Designation: Little is known of the habits and status of this rodent. Only small pockets of this species' habitat occur within the state.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in prairie tracts with sand dunes or stabilized sandy soils. Plains pocket mice dig their burrows in loose soils under vegetation. Burrows consist of one tunnel with expanded areas to store seeds. May also be found feeding in grain fields.

Key Areas for Plains Pocket Mouse in North Dakota

Plains pocket mice are confined to the southeast part of North Dakota. Part of the Sheyenne National Grasslands in Ransom County contains Plains Pocket Mouse habitat.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Conversion of sandy soil habitat for agricultural use is the greatest threat to this species. Already rare, the loss of remaining sandy soil habitat would be detrimental to the Plains Pocket Mouse.

Other Natural or Manmade Factors

Herbicide and pesticide use on agricultural land may be a threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- North Dakota State University is conducting small mammal surveys on the Sheyenne National Grasslands in SE North Dakota.

Previous Research and Survey Efforts

- The University of North Dakota conducted diversity and abundance work of terrestrial vertebrates in tall grass prairies.
- Small mammal inventories have been conducted on Sand Lake NWR, Sheyenne National Grasslands, and Tewaukon NWR.

Additional Research and Survey Efforts Needed

- Information on all aspects of this species' ecology needs to be examined, including abundance, reproduction, habitat requirements and threats.
- Document remaining sand dune habitat used by this species.
- Develop a monitoring protocol for small mammals.

MANAGEMENT RECOMMENDATIONS

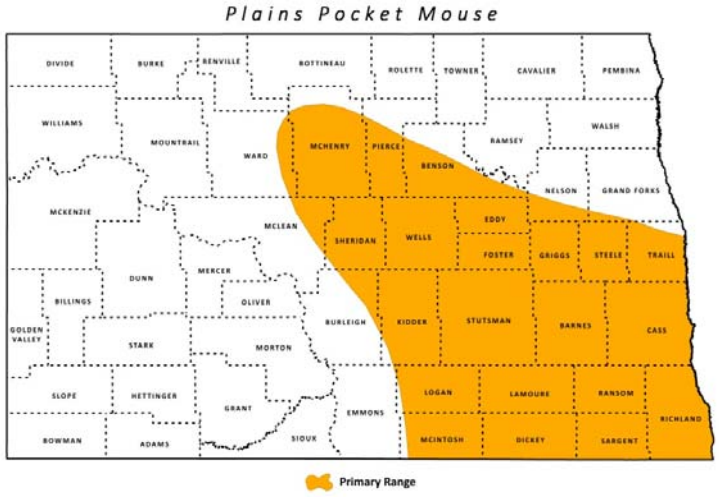
- Work with partners to minimize impacts to grassland habitats.
- Implement restoration projects where possible.
- Consider removal of dilapidated shelterbelts or stands of trees within grassland, particularly within 50 meters of grassland patches >100 ha.
- Implement grazing systems to benefit grassland species.
- Work cooperatively with state and federal agencies to develop BMP's that promote use of fire.
- Control noxious weeds through biological and chemical methods.
- Use fire or other tools to prevent woody invasion of grassland.
- Work with state and federal agencies to enforce existing pesticide regulations.
- Coordinate with wind energy companies to minimize impacts to grassland habitats.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on Plains Pocket Mouse.

MONITORING PLANS

No monitoring plan for this species has been developed.

2005-2015 PROGRESS

The Plains Pocket Mouse maintains a Level III on the Species of Conservation Priority list. A better understanding of this species historic distribution has been developed, but information on life history is still lacking.



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PYGMY SHREW

Scientific Name: *Sorex hoyi*

Species of Conservation Priority: Level II

General Description: North Dakota's smallest mammal. Four inches in length, of which one third is tail. It has a reddish brown to gray coat with an underside somewhat lighter. The tail is dark brown on top and lighter underneath. Pygmy Shrews have small black eyes and stiff hairs called vibrissae along their nose.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Found in eastern North Dakota in areas with exposed sand dunes or sandy soils covered with grass. Can also be found feeding in crop fields.

Federal Status: No federal status.

Reason for Designation: Little is known about this tiny mammal within the state. Its population is considered vulnerable in this part of the country.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Range-wide, Pygmy Shrew occupy numerous habitat types, including mesic mountainous areas, dry sandy ridges, forests and woodlands, grazed pastures, sagebrush grasslands, lowland marshes, and edges of sphagnum bogs. In this region they seem to favor wetlands and riparian woodlands associated with mixed and tall grass prairies.

Key Areas for Pygmy Shrew in North Dakota

In North Dakota this Pygmy Shrew appears to be associated with grassland/wetland complexes. Wetland complexes of Ransom and Benson counties have known populations. Forested areas in the Turtle Mountains and Pembina Gorge may also hold populations.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The conversion of native grasslands wetlands, and riparian areas is a major threat facing this species.

Other Natural or Manmade Factors

Use of pesticides may threaten this species' food base.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there is no research or survey effort in progress.

Previous Research and Survey Efforts

- A survey and relationship study of wetlands in the Pygmy Shrew range was conducted by the USFWS (1989).
- Small mammal surveys have been conducted on Upper Souris NWR, Des Lacs NWR, and J. Clark Salyer NWR, all within the possible range of the Pygmy Shrew.

Additional Research and Survey Efforts Needed

- Develop a monitoring protocol for small mammals in North Dakota.

MANAGEMENT RECOMMENDATIONS

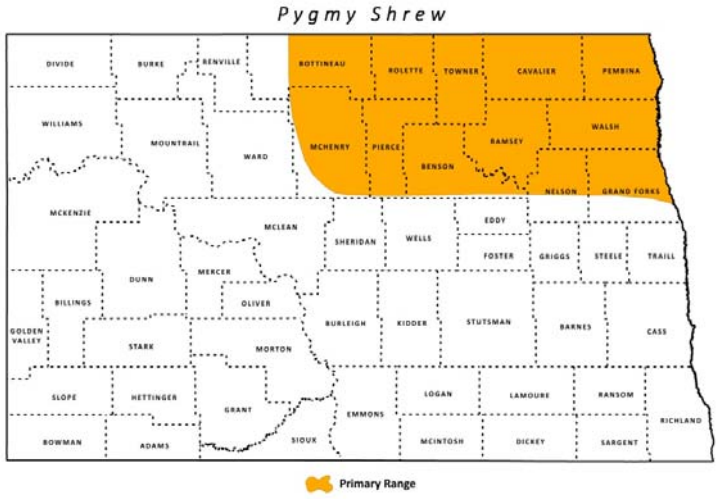
- Work with partners to minimize impacts to grassland habitats.
- Implement restoration projects where possible.
- Implement grazing systems to benefit grassland/wetland species.
- Work with partners to ensure Swampbuster provisions are maintained.
- Control noxious weeds through biological and chemical methods.
- Work with state and federal agencies to enforce existing pesticide regulations.
- Coordinate with wind energy companies to minimize impacts to grassland habitats.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on Pygmy Shrew

MONITORING PLANS

No monitoring plan for this species has been developed.

2005-2015 PROGRESS

The Plains Pocket Mouse maintains a Level I on the Species of Conservation Priority list. A better understanding of this species historic distribution has been developed, but information on life history is still lacking.



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RICHARDSON'S GROUND SQUIRREL

Scientific Name: *Urocitellus richardsonii*

Species of Conservation Priority: Level II

General Description: Large colony-dwelling ground squirrel. Pelage is a mixture of buff and black hair on the back with a tan belly.

Status: Year-round resident.

Abundance: Locally Common.

Primary Habitat: Prefers native mixed-grass prairie. Commonly found in areas that are heavily grazed.

Federal Status: No federal status.

Reason for Designation: The Richardson's Ground Squirrel serves much the same role as the Black-tailed Prairie Dog does in the western half of the state. Many species, including other species of conservation priority rely on Richardson's Ground Squirrels for food and shelter. There is some indication of a decline within the state. This, coupled with a lack of information on the species, makes them a conservation priority.

NDGFD

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

A colonial species, Richardson's Ground Squirrels prefer intact blocks of rangeland. Well grazed pastures of native or tame grass in areas of sandy loam or gravelly soils offer the best conditions for burrowing. Areas near agricultural fields are also preferred, as cereal grain is used as a food source.

Key Areas for Richardson's Ground Squirrel in North Dakota

Richardson's Ground Squirrels are found only east of the Missouri River in North Dakota. Portions of Mclean, McHenry, Pierce, Eddy, and Foster counties are key areas for this species because of their larger tracts of intact prairie.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Conversion of native prairie and rangeland to agricultural lands is the leading threat to the Richardson's Ground Squirrel.

Other Natural or Manmade Factors

Poisoning to control and eradicate colonies is prevalent. Recreational shooting of Richardson's Ground Squirrels may affect populations. Colonial mammals are susceptible to plague, although no documented cases are known in North Dakota.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- No current research for this species is ongoing.

Previous Research and Survey Efforts

- A distribution study was conducted by the Northern Prairie Wildlife Research Center in 2005.
- The U.S. Forest Service mapped Richardson's Ground Squirrel colonies on the Sheyenne National Grasslands in 2002.
- Colonies were mapped by the USFS on the Sheyenne Grasslands in 2005-06.
- A reproduction study was conducted by the University of North Dakota in 1975.

Additional Research and Survey Efforts Needed

- Utilize developed monitoring protocol for this species.

MANAGEMENT RECOMMENDATIONS

- Protect native prairie where possible.
- Consider removal of dilapidated shelterbelts or stands of trees within grassland, particularly within 50 meters of grassland patches >100 ha.
- Implement grazing systems to benefit grassland species.
- Work cooperatively with state and federal agencies to develop BMP's that promote use of fire.
- Control noxious weeds through biological and chemical methods.
- Use fire or other tools to prevent woody invasion of grassland.
- Work with state and federal agencies to enforce existing pesticide regulations.
- Coordinate with wind energy companies to minimize impacts to grasslands.
- Surveys to establish baseline information on Richardson's Ground Squirrels.

MONITORING PLANS

No monitoring plan is in place for Richardson's Ground Squirrel. A random township survey method developed in a previous study could be used to accomplish this.

2005-2015 PROGRESS

The Richardson's Ground Squirrel maintains a Level II on the Species of Conservation Priority list. Initial surveys were done in SWG T-3-1 **Distribution of Richardson's Ground Squirrel Colonies in North Dakota and Burrowing Owl Use of the Ground Squirrel Colonies.** Follow-up work is needed to monitor this species.

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RIVER OTTER

Scientific Name: *Lontra canadensis*

Species of Conservation Priority: Level II

General Description: The River Otter is a large, semi-aquatic member of the weasel family weighing from 9 - 41 pounds. Total body length of adult otters ranges from 35 - 54 inches, with long muscular tails accounting for 35 to 40% of the total length. Fur coloration usually is dark brown on the back with a lighter belly and throat. Otters are good swimmers, having a long streamlined body, short powerful legs and webbed feet.

Status: Year-round resident.

Abundance: Uncommon.

Primary Habitat: River Otters are found in a variety of aquatic habitats, including rivers, streams, backwater sloughs, wetlands, lakes and ponds. Key factors that determine habitat use include food availability (primarily fish and crustaceans), year-round water supplies and adequate cover.

Federal Status: No federal status.

Reason for Designation: Historically, River Otters occurred in aquatic habitats throughout North Dakota, but had declined or disappeared. A study of otters in eastern North Dakota resulted in documentation of a population. More information is needed to re-evaluate their status.

USFWS

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

In Midwestern states, landscapes that characterize high-quality River Otter habitat include a relatively high number of wetlands and high percentage of woodland or riparian habitat within about 300 yards of a river or stream. Otters often are found in aquatic habitats associated with beaver activity and in shallow pools or below small dams where fish are concentrated. Habitats that retain open water in winter are important to otters for acquiring food. Otters den in riparian vegetation, undercut banks, abandoned beaver bank dens and lodges, rock cavities, log jams, and tree root structures.

Key Areas for River Otter in North Dakota

The Red River of the North and its tributaries are important waterways for this species. Otters will also use adjacent wetlands and lakes. Reports of otters in the Missouri River do occur but a population has not been identified to date.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The greatest threat to River Otters is destruction or modification of riparian habitat for the purposes of economic or housing developments, recreation, or for conversion to cropland.

Other Natural or Manmade Factors

Aquatic habitats where River Otters have been sighted and other water bodies throughout North Dakota have documented pollution issues (i.e., dissolved oxygen, sediment, nutrient and heavy metal levels) that could impact survival of otters by reducing prey availability or impairing reproduction. River Otters are susceptible to human-caused mortality, including incidental trapping and collisions with vehicles.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Currently there is no research targeting River Otters within the state.

Previous Research and Survey Efforts

- Frostburg State University studied otters and other meso-carnivores in eastern North Dakota from 2008 to 2012.
- Frostburg State University surveyed otters in western North Dakota tributaries in 2012.
- Sightings are recorded by NDGFD staff. Necropsies are performed on incidental catches or vehicle-hit otters.

Additional Research and Survey Efforts Needed

- No additional research has been identified.

MANAGEMENT RECOMMENDATIONS

- Protect rivers, streams, and riparian areas where possible (i.e. easements and/or acquisition).
- Work with partners to ensure Swampbuster provisions are maintained.
- Continue to use the Section 404 program to ensure affected rivers and riparian areas are mitigated to replace form and function.
- Continue to work with other federal agencies (i.e. FAA and FHWA) not covered by Section 404 or Swampbuster to ensure

affected rivers and riparian areas are mitigated to replace form and function.

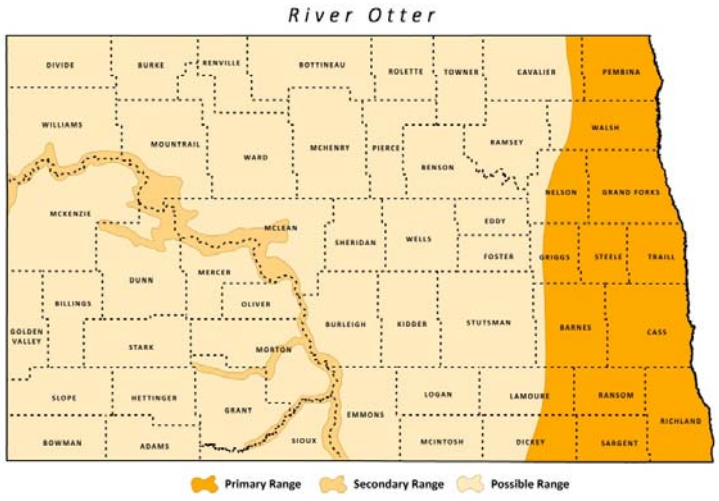
- Continue to work with NDSWC to develop minimum in-stream flow recommendations.
- Develop and promote incentive programs to restore riparian areas.
- Develop and promote incentive programs to enhance or restore riparian areas.
- Continue to work with ND 319 Task Force in prioritizing projects within impaired watersheds and implementing BMP's.
- Work to modify dam operation regimes.
- Develop and promote incentive programs for adjacent landowners to improve bank stability through land use changes (e.g. RRBRP).
- Promote non-traditional bank stabilization measures (i.e. root wads, willow waddles, vegetative slope)
- Control noxious weeds through biological and chemical methods.
- Cooperate with Fisheries Division on state aquatic nuisance species plan.
- Continue to work with partners in promoting and distributing educational materials related to river, stream and riparian values and good stewardship.

MONITORING PLANS

The NDGFD rare furbearer reporting system along with information obtained from incidental trapping is being used to monitor River Otter. A standardized survey method such as the one developed by Frostburg State University could be used to gather more information if needed.

2005-2015 PROGRESS

The River Otter maintains a level II Species of Conservation Priority ranking. SWG's T-12-R **Evaluating the Distribution and Abundance of River Otters and Other Meso-carnivores in Eastern North Dakota Drainage: Applications of GIS, Genetic and Digital Technologies for Conservation Planning** and T2-6-R **Evaluating the Distribution of River Otters and Beavers throughout the Missouri and Souris River Drainages in North Dakota** have provided much needed information on the species distribution within the state as well as food habits and habitat preferences. The framework for monitoring this species was also developed if additional monitoring is necessary.



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SAGEBRUSH VOLE

Scientific Name: *Lemmiscus curtatus*

Species of Conservation Priority: Level III

General Description: This rodent has a gray, bushy coat, small rounded ears and a very short tail. Unlike other voles it is usually found living in small colonies consisting of shallow burrows.

Status: Year-round resident.

Abundance: Rare.

Primary Habitat: Semi-arid areas with loose soil; usually a combination of grass and sagebrush.

Federal Status: No federal status.

Reason for Designation: Sagebrush habitat this species inhabits is threatened by conversion and other land use practices.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found in semi-arid lands. Soil normally loose and well drained. Vegetation is normally sagebrush or rabbit brush with a grass component.

Key Areas for Sagebrush Vole in North Dakota

Sagebrush Voles are found in southwestern North Dakota. Sagebrush habitat in that portion of the state would be a key area identified for this species.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

The health of North Dakota sagebrush habitat is the greatest concern for this species. Much of the states sagebrush habitat has been disturbed and is in poor condition.

Other Natural or Manmade Factors

No other threats have yet been identified for this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Northeastern State University is currently surveying "fringe" mammals in southwestern ND of which the Sagebrush Vole is included.

Previous Research and Survey Efforts

- Northern Prairie Wildlife Research Center developed an annotated bibliography for mammals of North Dakota.
- University of North Dakota studied Climate Change and Land use Effects on Small Mammal Communities in a Northern Great Plans Landscape.
- Dickinson State University surveyed small mammals in western North Dakota as part of a Black-tailed Prairie Dog survey.
- A number of agencies have surveyed for small mammals in the southwestern part of the state, including REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research and survey efforts are needed to identify target areas and possible threats for this species.
- Develop a monitoring protocol for small mammals.

MANAGEMENT RECOMMENDATIONS

- Work with partners to implement easements or land acquisition.
- Communicate with the oil industry to minimize impacts to sagebrush habitats.
- Implement restoration projects where possible.
- Implement grazing systems to benefit shortgrass prairie residual cover, forb species, and woody draws (i.e. participate in revision of USFS Allotment Management Plans or AMP's).
- Control noxious weeds through biological and chemical methods.
- Coordinate with wind energy companies to minimize impacts.
- Look to exchange and consolidate mineral rights, particularly within focus areas.

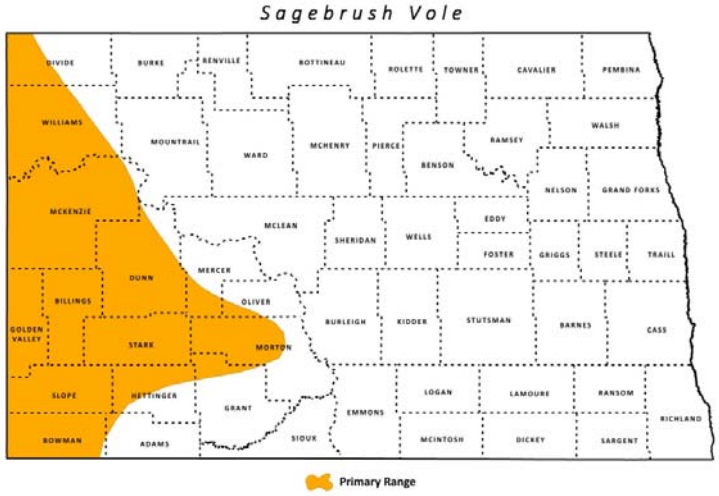
- Continue to provide public land management agencies with mitigation recommendations in respect to species of concern.
- Survey areas of data gaps. Conduct research/surveys to establish baseline information on sage brush voles.

MONITORING PLANS

No monitoring plan for this species has been developed.

2005-2015 PROGRESS

The Sagebrush Vole maintains a level III Species of Conservation Priority ranking. Little is still known of this species. A current study T-39-R-1 **Survey of 'fringe' mammals in western North Dakota** hopes to provide much needed information on this species.



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SWIFT FOX

Scientific Name: *Vulpes velox*

Species of Conservation Priority: Level II

General Description: Smallest member of the canine family. 2 ½ feet from snout to tip of tail. Yellowish tan coat with some gray along the back. Belly, throat, and chest are buff to white. Distinctly large ears for body size. Long bushy tail with a black tip.

Status: Believed to be a resident species, potentially breeding.

Abundance: Rare.

Primary Habitat: Large tracts of short and mixed-grass prairie.

Federal Status: No federal status.

Reason for Designation: A combination of loss of native prairie and poisoning efforts aimed at wolves and coyotes are thought to be the cause of initial population decline. The species may have re-established in the state as a result of re-introductions in neighboring states.

Craig Bihrle

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Found statewide at one time with the exception of the eastern tallgrass prairies. A majority of Swift Foxes were found in the shortgrass prairies of southwestern North Dakota. Swift Foxes prefer large tracts of native prairie, usually grazed, but will select dens sites near agricultural fields and human development.

Key Areas for Swift Fox in North Dakota

Shortgrass prairie in extreme western and southwestern North Dakota offers the most suitable habitat for Swift Fox populations in North Dakota. This region is also the closest in proximity to breeding populations in South Dakota and Montana.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

Loss of suitable native short and mixed-grass prairie due to conversion to agricultural and development provide the largest threat to re-establishing populations.

Other Natural or Manmade Factors

High red fox and coyote populations threaten Swift Fox populations due to predation. Distance to breeding populations in South Dakota and Montana is a threat to natural repopulation of suitable habitat in North Dakota.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- The North Dakota Game and Fish Department will begin a survey to evaluate population status in SW North Dakota in 2015.
- Population status of a re-introduced population at Badlands National Park is ongoing.

Previous Research and Survey Efforts

- World Wildlife Fund conducted modeling of potential habitat in SE Montana. Included areas in North Dakota.
- A diet study was performed in Montana on a reintroduced population.
- Prey density studies have been conducted throughout the Swift Fox range with SD, MT, and SK being the closest to North Dakota.
- Denning site selections have been studied in southwestern South Dakota.
- Reintroductions have occurred in parts of Montana, South Dakota and Saskatchewan.

Additional Research and Survey Efforts Needed

- Determine presence of Swift Fox in North Dakota
- Identify existing native shortgrass/mixed-grass prairie ecosystem and other suitable Swift Fox habitats.

MANAGEMENT RECOMMENDATIONS

- Promote habitat conservation and habitat management in suitable Swift Fox habitat.
- Coordinate with federal and state agencies to evaluate current levels of protection of habitat.
- Identify habitat corridors and surrounding areas between habitat blocks for protection.

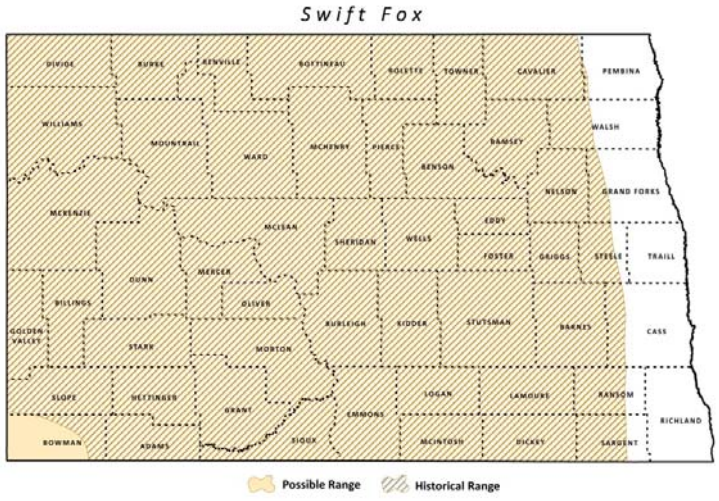
- Monitor existing and identify new threats to Swift Fox population expansion.
- Promote scientific Swift Fox management and a public education program.

MONITORING PLANS

No monitoring plan currently in place. The North Dakota Game and Fish will begin surveys of potential habitat to monitor species re-establishment in the state.

2005-2015 PROGRESS

The Swift Fox maintains a level II ranking. Re-introductions into Montana and South Dakota appear to have paved the way for natural re-establishment of the species in extreme southwestern North Dakota. An effort to monitor that re-establishment will begin in the summer of 2015.



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TOWNSEND'S BIG-EARED BAT

Scientific Name: *Corynorhinus townsendii*

Species of Conservation Priority: Level I

General Description: Distinguishable from other North Dakota bats by its oversized ears. The large fleshy ears are half the length of the body and connected to one another just about the eyes. Fur color ranges from brown to a dark gray.

Status: Seasonal as no hibernacula have been identified for this species in the state.

Abundance: Rare.

Primary Habitat Can be found in a number of types of habitat in the summer months but most commonly around forest and riparian areas. Winter hibernacula is found in caves and mines with cool stable temperatures. This habitat has not been identified in North Dakota to date for this species.

Federal Status: No federal status.

Reason for Designation: Newly documented in the state. Is a state species of concern throughout the western United States.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Habitat generalist, but mostly commonly associated with forest and riparian areas in the summer months. Winter hibernacula include caves and mines throughout its range. A hibernacula has not been documented to date in North Dakota

Key Areas for Townsend's Big-eared Bat in North Dakota

In North Dakota Townsend's Big-eared Bats are found within the badlands of the Little Missouri River. Also recently they have been documented in the Turtle Mountains region of the state.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

This and other bat species in the state rely on caves and crevices for hibernacula and maternal grounds. These sites are susceptible to human and other types of disturbance. Frequent disturbance may cause females to drop young in the rearing process or abandon the area. Loss and disturbance of roost habitat is a primary threat.

Other Natural or Manmade Factors

Townsend's Big-eared Bat and other bats in North Dakota are insectivores. Pesticides used in the vicinity of feeding grounds would affect bat populations by killing prey. Also, bats are known to store pesticides within fat reserves. Loss of water sources for drinking is also a potential threat. When natural water sources are dry, bats may resort to drinking from stock tanks. These can be potential bat traps. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species. Loss of genetic diversity due to non-connectivity of populations.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Identification of hibernacula in western North Dakota as well as their susceptibility to White-nose Syndrome is being conducted by North Dakota State University.
- North Dakota State University is currently developing a North Dakota Bat Management Plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University.
- A number of agencies have surveyed for small mammals in the southwestern part of the state including, REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.
- Life History requirements for this species specific to North Dakota should be investigated.
- Document the effects of energy development on western bat species.

MANAGEMENT RECOMMENDATIONS

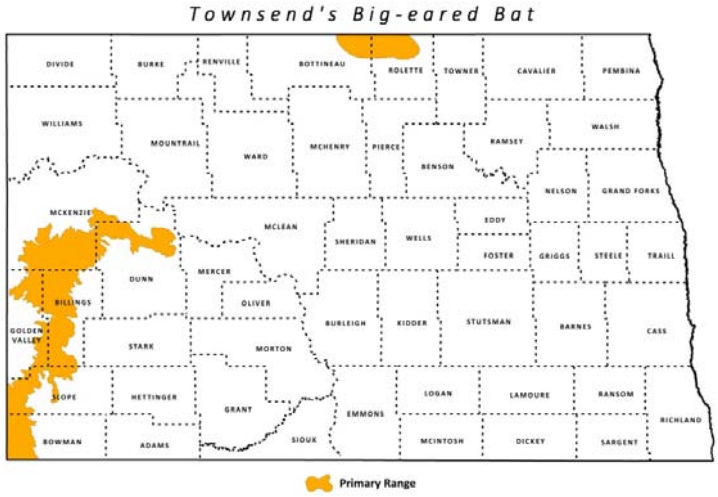
- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

Townsend's Big-eared Bat was added to the Species of Conservation Priority list during the revision of the Wildlife Action Plan in 2015. It is a state species of concern in many western states. SWG T2-5-R Distribution and Habitat Use of the Bats of North Dakota documented Townsend's Big-eared Bats including a potential range expansion.



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WESTERN SMALL-FOOTED BAT

Scientific Name: *Myotis ciliolabrum*

Species of Conservation Priority: Level III

General Description: 4 inches from nose to tail and weighing .1-.2 ounces. Its pelage is pale yellowish brown and its ears and wing membranes are black. A black band of hair runs across both eyes, giving the appearance of a mask.

Status: Possibly year-round, may migrate short distances to hibernate.

Abundance: Rare.

Primary Habitat: Documented in the riparian corridors of the Little Missouri and Missouri rivers. Normally found in rugged terrain they roost alone or in small groups in rock crevices and under tree bark. This species has a strong association with coniferous trees.

Federal Status: No federal status.

Reason for Designation: Little is known about this species in North Dakota. Although rare to the state there are some indications that it is declining range wide.

NEED PHOTO

LOCATIONS AND CONDITIONS OF KEY HABITAT

Preferred Habitat

Western Small-footed Bat are found in areas with rock cliffs, clay buttes and steep slopes. Conifer trees are also associated with this species. Deep crevices are needed for hibernation.

Key Areas for Western Small-footed Bat in North Dakota

Has been documented in the riparian corridors of the Little Missouri and Missouri rivers.

PROBLEMS WHICH MAY AFFECT THIS SPECIES

Habitat

This and other bat species in the state rely on caves and crevices for hibernacula and maternal grounds. These sites are susceptible to human and other types of disturbance. Frequent disturbance may cause females to drop young in the rearing process or abandon the area. Loss and disturbance of roost habitat is a primary threat.

Other Natural or Manmade Factors

Western Small-footed Bat and other North Dakota bat species are insectivores. The use of pesticides in the vicinity of a feeding ground would affect bat populations by killing prey. Also, bat species are known to store pesticides within fat reserves. Loss of water sources is also a potential threat to this species. When natural water sources are dry, bats may resort to drinking from stock tanks, which can potentially trap bats. Wind turbines have been identified as a source of mortality to bats and several turbine "farms" are under construction in parts of North Dakota. Indiscriminate killing due to a negative public perception has been identified as a possible threat to this species.

RESEARCH AND SURVEY EFFORTS

Current Research and Survey Efforts

- Identification of hibernacula in western North Dakota as well as their susceptibility to White-nose Syndrome is being conducted by North Dakota State University.
- North Dakota State University is currently developing a North Dakota Bat Management Plan.

Previous Research and Survey Efforts

- A survey of bat species in the state was conducted by North Dakota State University.
- A number of agencies have surveyed for small mammals in the southwestern part of the state including, REAP, Theodore Roosevelt National Park, the U.S. Forest Service, and U.S. Bureau of Land Management.

Additional Research and Survey Efforts Needed

- Research to assess primary threats to this species.
- Life History requirements for this species specific to North Dakota should be investigated.
- Document the effects of energy development on western bat species.

MANAGEMENT RECOMMENDATIONS

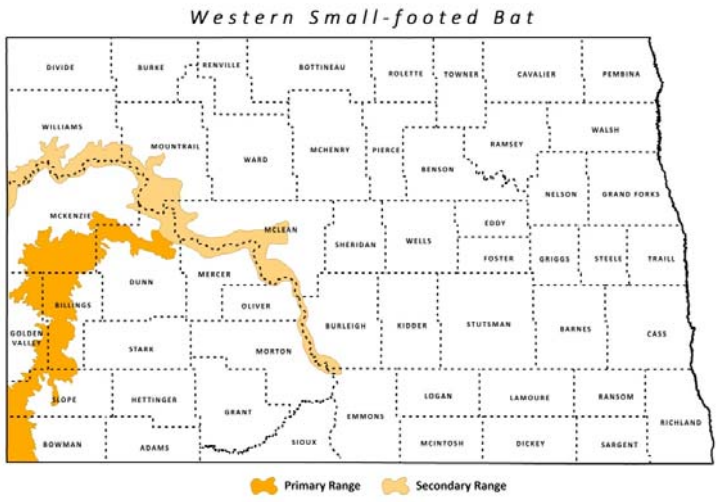
- Protection and restoration of riparian habitat.
- Manage riparian habitats to maintain snags, connecting corridors, and edges.
- Maintain and improve seeps, ponds, and other wet areas as water sources.
- Education on the benefits and misconceptions about bats.
- Determine and protect nursery and hibernation sites.
- Provide roosting sites in areas where natural sites have been destroyed or disturbed.
- Reduce use of pesticides near waterways where bats forage.

MONITORING PLANS

A monitoring protocol will be addressed in the North Dakota Bat Management Plan currently under development.

2005-2015 PROGRESS

The Western Small-footed Myotis maintains its Level III Species of Conservation Priority ranking due to lack of information known about this species. SWG T2-5-R Distribution and Habitat Use of the Bats of North Dakota increased the information known for this species. Continued work is needed to address threats to this species and implementation of a monitoring plan.



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